ALIAMASS

Thermal Mass Flowmeter

ATMF8000 Inline Series

GENERAL

The Alia Inline mass Flowmeter assembly includes the flow sensing element, temperature sensing element, bridge amplifier and signal output board, transmitter enclosure, and flow section. Both integral and remote electronics configurations are available (see drawings below). The flow section is typically specified to match our customer's pipe configuration and is installed directly in the flow line. This design has the sensing elements mounted directly in the flow section for exposure to the process gas. Our Inline style thermalmass flowmeters are available in sizes from 1/4" pipe through 4" pipe and are provided with threaded male NPT ends as the standard mounting style. Optional end mounting styles may be specified, such as tube ends, tube end fittings, VCR mountings butt weld ends, flanged end configurations (see diagrams), etc.. as required. Pipe sizes in excess of 4" (100mm) require insertion style thermal mass flow meters.

FEATURES

- Direct mass flow measurement of any gas with actual gas calibration
- Up to four in-dependent switch able flow curves
- Tracking of overall gas consumption over a turndown ratio of at least 100:1
- Selectable engineering units, dynamically converts the flow rate and total flow
- A 2 line, 16 character display for rate, total, and relay status
- Data logger that can store flow,velocity,temperature, total, etc.
- Available with Infrared communicator for remote access of data
- Standard software available multi-curve fit programs
- Up to 20 instant flow adjustments

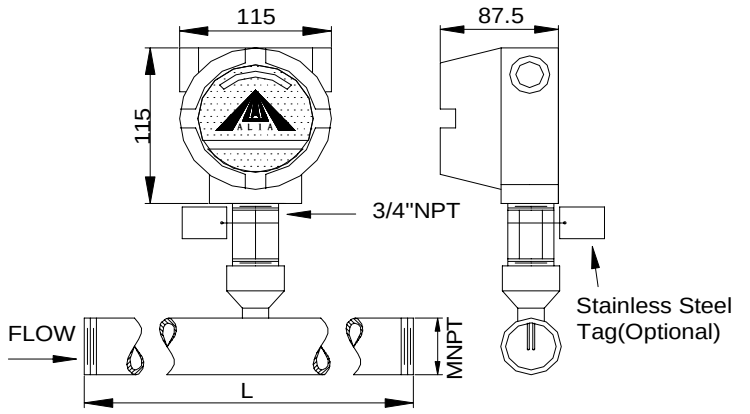
SPECIFICATION

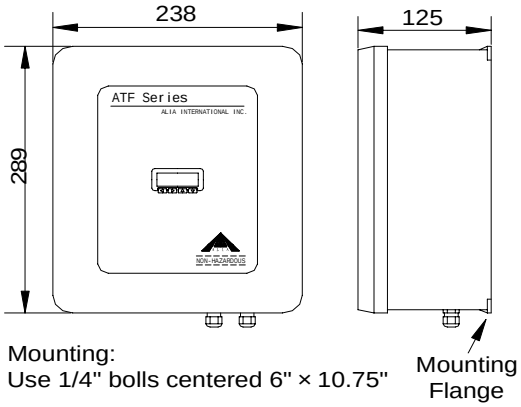
- Process Connection : Threaded, Flanged
- Process temperature : 0 to +200°C
- Operating pressure : 40 bar
- Mass Flow rate : See model selection guide section
- Flow units : Kg/hr, Kg/mn, Kg/s Lb\hr, Lb/m Lb/s
  NCMH, SCFM, NLPM, SLPM
  Mt/s, F/mn, BTU/Hr, BTU/min
- Gas temperature effect : 0.01% /° C
- Accuracy (and linearity) : ±[1% of Reading + (.5% FS+ .02%/°C)]
  ± 0.2% of Full Scale
- Repeatability : ± 0.25% of Full Scale
- Turn down ratio : Over 100:1
- Response time : Less than one seconds
- Material : 316SS as per DIN 1.4571 (AISI 316 Ti)
- Data logger : Flow rate, Total, Relays, etc.
  5800 data
- Linear signal output : 0-5 VDC & 4-20 mA
- Pulse output : scalable
- Relays : Two 1-amp, SPDT
  User-selectable alarm functions
- Display units : Flow, Total flow, Switch settings
  Temperature, Elapsed time
- RAM Back-up : Lithium Battery
- Data storage : EPROM storage up to 10 years
- Self diagnostics functions : ADC, DAC,
  Alarm relay for EMI impulse noise
- Signal Interface : RS232 & RS485, HART, MODBUS,etc..
- Housing protection : NEMA 4,Class 1, Div 1, Groups B, C, & D
- Ex-protection : II 2 GD EEx d IIC T2 or **T3** or **T4**
- Cable (remote version) : 300 meters
- Wetted materials : 316 SSS and Hastelloy (optional)
- weight (approximate) :
- Integral Type :
  8636MP to 8659MP : 1 to 4 Kg
  8669MP to 8689MP : 2-3 Kg
  8710MP and 8712MP : 4-5 KG
  8716MP and 8720MP : 6-7 KG
  8724MP(flanges include) : 10 KG
  8732MP(flanges included) : 11 KG
  MPNH style : Reduce weight by 0.5 kg for each above
- Remote Type :
  8036MP to 8059MP : 3 to 6 Kg
  8069MP to 8089MP : 6-8 Kg
  8110MP and 8112MP : 8-10 KG
  8116MP and 8120MP : 12-14 KG
  8124MP(flanges include) : 16 KG
  8132MP(flanges included) : 18 KG
  MPNH style :Reduce weight by 1 kg for each above
  Notes:-weight +0.5 kg for 150# flanges + 1kg for 300#
- Power requirements : 115VAC @, 1/8 A 230VAC @ 1/16 A
  24 VDC @ 1/4A
- Power Consumption : 5 Watts or less
- NIST traceable : Standard for all calibration

2960 Polk St. Suite 12, San Francisco, CA 94109 USA
URL : http://www.smartmeasurement.com
TEL : +1- 415 - 673 - 0143 FAX : +1- 415 - 673 - 4416
E-mail : pearl@smartmeasurement.com

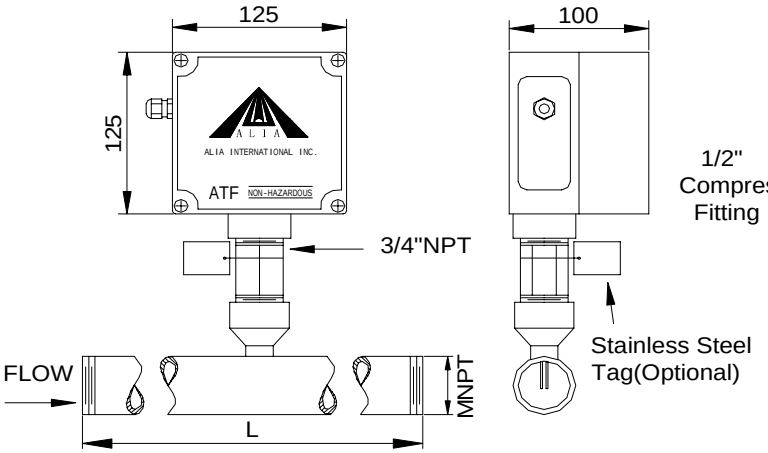
ATMF 8000 Inline Flowmeter - Remote Version

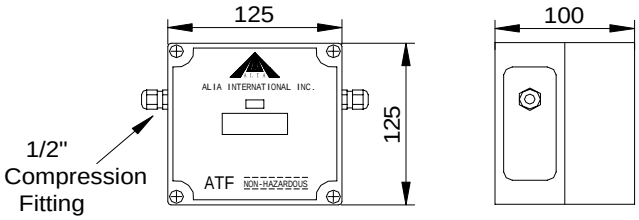
Hazardous Version





Non-hazardous Version





Two-wire,twisted pair interconnect cable required between Remote Electronics and Flow Transmitter(max 5 ohm resistance)

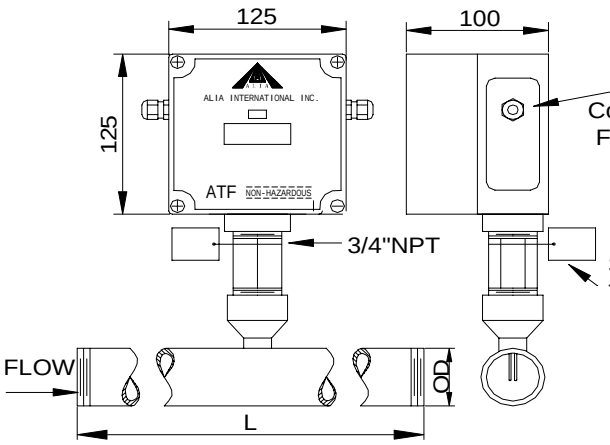
AWG Wire	Length	AWG Wire	Length
20	5.0m	14	20.0m
18	7.5m	12	31.5m
16	12.5m		

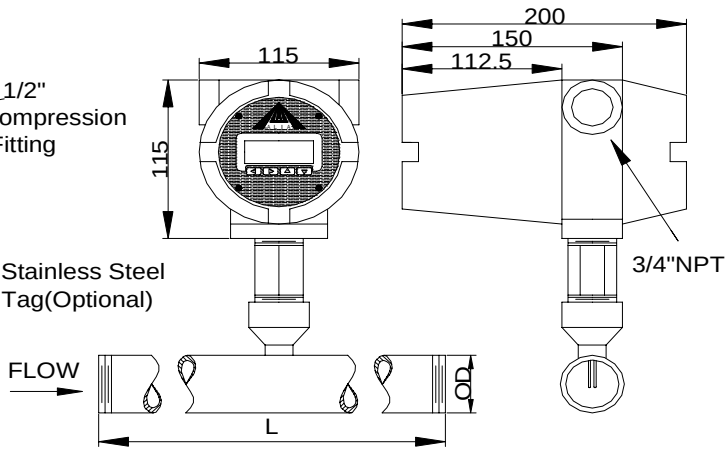
Model Number	MNPT	Length
ATMF8036	1/4"(6.3mm)	6"(150mm)
ATMF8049	3/8"(9.5mm)	6"(150mm)
ATMF8059	1/2"(12.5mm)	7"(175mm)
ATMF8069	3/4"(19.0mm)	7"(175mm)
ATMF8089	1"(25.0mm)	8"(200mm)
ATMF8110	1 1/4"(32.0mm)	10"(250mm)

Model Number	MNPT	Length
ATMF8112	1 1/2"(37.5mm)	15"(375mm)
ATMF8116	2"(50.0mm)	20"(500mm)
ATMF8120	2 1/2"(62.5mm)	25"(625mm)
ATMF8124	3"(75.0mm)	30"(750mm)
ATMF8132	4"(100mm)	40"(1000mm)

Note:all dimensions are mm unless stated

ATMF 8000 Inline Flowmeter - Remote Version



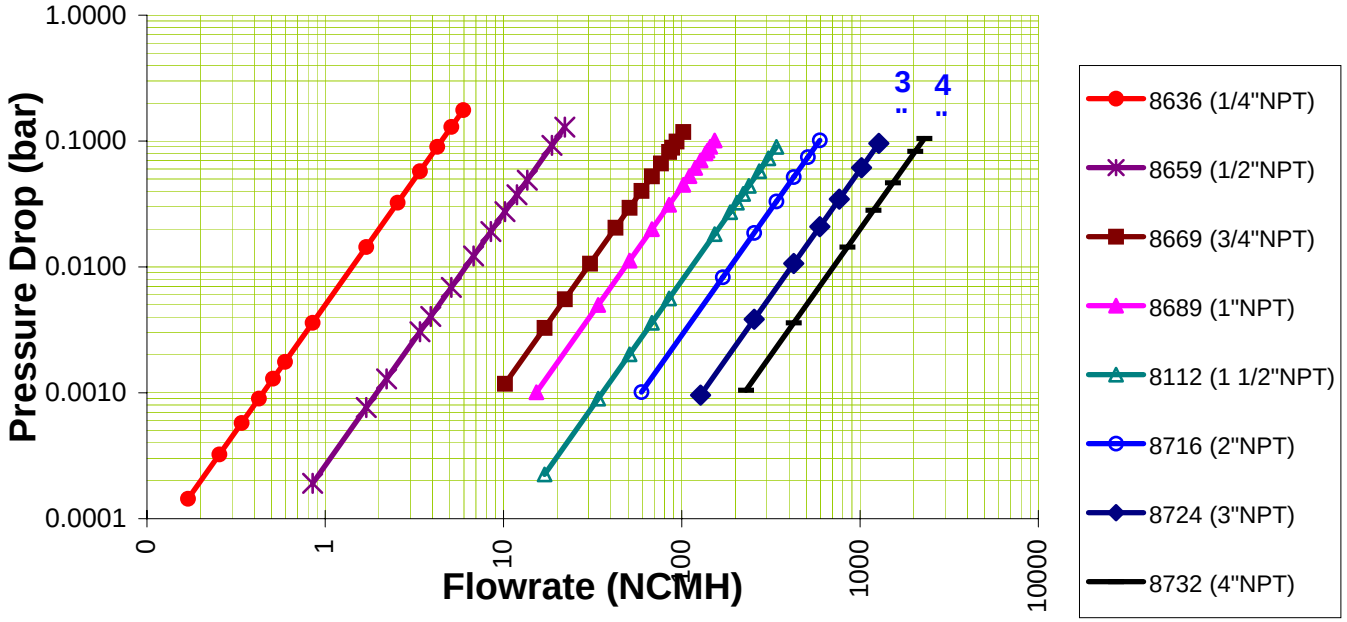


Model Number	O.D	Length
ATMF8636	1/4"(6.3mm)	6"(150mm)
ATMF8649	3/8"(9.5mm)	6"(150mm)
ATMF8659	1/2"(12.5mm)	7"(175mm)
ATMF8669	3/4"(19.0mm)	7"(175mm)
ATMF8689	1"(25.0mm)	8"(200mm)
ATMF8710	1 1/4"(32.0mm)	10"(250mm)

Model Number	O.D	Length
ATMF8712	1 1/2"(37.5mm)	15"(375mm)
ATMF8716	2"(50.0mm)	20"(500mm)
ATMF8720	2 1/2"(62.5mm)	25"(625mm)
ATMF8724	3"(75.0mm)	30"(750mm)
ATMF8732	4"(100mm)	40"(1000mm)

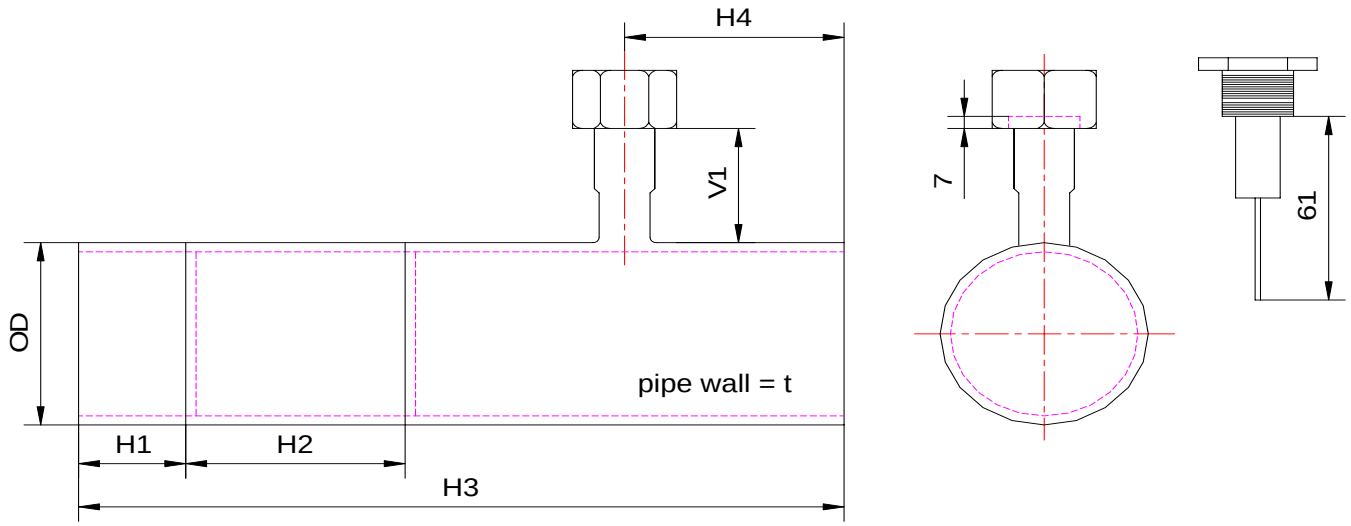
Note:all dimensions are mm unless stated

ATMF 8000 INLINE SERIES PRESSURE DROP



VCR Option

Flow Section Dimensions for Tube flow section and VCR Sensor



OD	H1	H2	H3	H4	V1	t
1.5"	13	39	140	50		
80A	45	90	310	85	74	2.1
100A	45	112	380	104	80	2.1
150A	65	165	540	147	55	2.8
200A	85	215	710	204.9	14	
6"	73	165	550	85	63	2.8

Please contact your local SMC application engineer

****You also need to provide the following information:**

Gas Composition	we calibrate our mass Flowmeters to NIST standards with actual gas or a mixture that reflects the customers process. Exact gas name or mixtures listed as a percent of the total, with the sum equaling 100%).
Full Scale Flow	We need your maximum and minimum flow rates (Full Scale), units must be Kg/hr, Lb/hr, NCMH or SCFM.
Line Size	We need to know your pipe size as well connection type (flange, threaded, etc..)
Gas Pressure and Temperature	We calibrate under conditions as close to your process environment as possible
Electronics Temperature	Temperature of the environment surrounding the Flowmeters electronics.
Power Requiremen	Please specify your power requirements such as 24 VDC or 115 VAC or 230 VAC
Configuration	We have various configurations such as Ex proof, Non-Ex proof, remote, integral. See below:

Model Selection Guide

ATMF8000 Inline Series

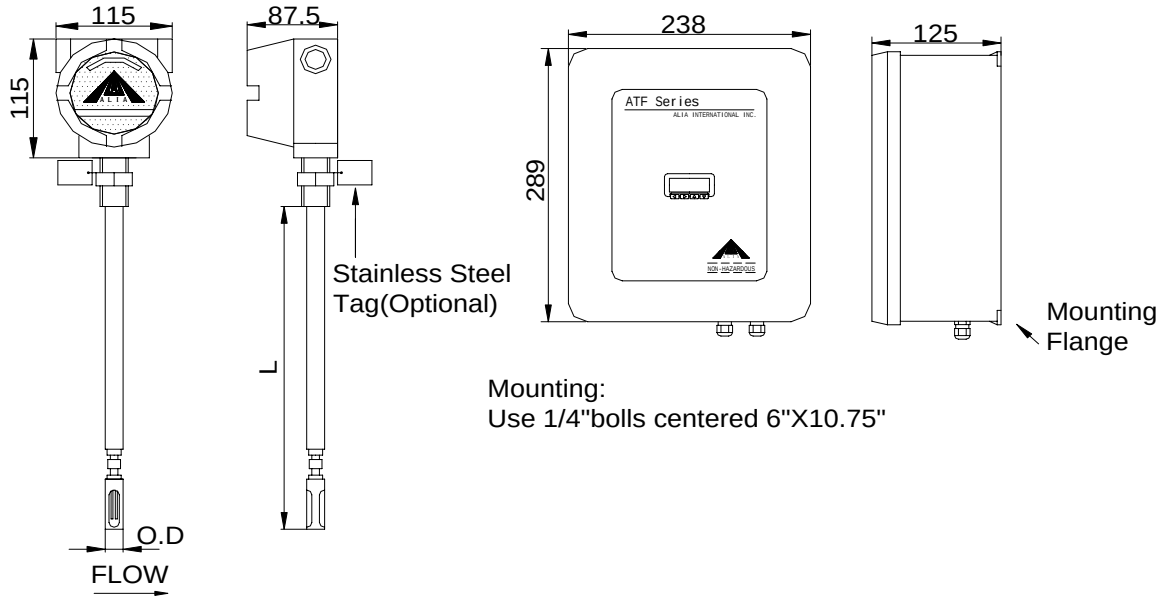
Example : ATMF8716-SSS-133--AC220-JIS-BTW-VCR-10Ra-O2CLN-CR1-CONF-O2 (600 NCMH, 70C,7 Barg)

AMF-		XXXX	XXX	133	XXXX	XXXXXXX	XXX	XXXX	Gas type, Flow rate,P,T	Description
Remote Style										
1/2"	8059								0-30 NCMH	Flowbody size and Flow Ranges
3/4"	8069								0-125 NCMH	
1"	8089								0-200 NCMH	
1.25"	8110								0-300 NCMH	
1.5"	8112								0-400 NCMH	
2"	8116								0-650 NCMH	
2.5"	8120								0-900 NCMH	
3"	8124								0-1500 NCMH	
4"	8132								0-2500 NCMH	
Integral Style										
1/2"	8659								0-30 NCMH	Flowbody size and Flow Ranges
3/4"	8669								0-125 NCMH	
1"	8689								0-200 NCMH	
1.25"	8710								0-300 NCMH	
1.5"	8712								0-400 NCMH	
2"	8716								0-650 NCMH	
2.5"	8720								0-900 NCMH	
3"	8724								0-1500 NCMH	
4"	8732								0-2500 NCMH	
Explosion Proof		MP								Environment
Non Hazardous		MPNH								
316 SSS < 70C			SSS							Operating temperature
316 SS (70-200C)			SSM							
AC 115					AC115					Power Supply
AC 230					AC230					
DC 24					DC24					
NPT						NPT				Process connections
DIN						DNFL				
JIS						JIS				
ANSI 150#						FSW15XX				
ANSI 300#						FSW30XX				
ANSI 600#						FSW60XX				
One calibration curve							C1R			No. of output curves
Multi-calibration curves							C*R			
Oxygen Cleaning								O2CLN		Options
Butt Welded								BTW		
Ra Finish (7-10Ra)								Ra10		
VCR Sensors								VCR		
Extended temperature electronics (-40C to 85C)								ETEMP		
Calibration and test point report								CONF		
Process Gas (Please indicate, gas type, flow rate, line size, pressure and temperature)										Process information
Note: Options such bus outputs, HART, monel and hasteloy C material, etc.are available PLEASE contact SMC.										

The Alia Insertion mass Flowmeter includes the flow sensing element, temperature sensing element, bridge amplifier/signal output board, transmitter enclosure, and probe section. Both integral and remote electronics are available (see drawings below). The Alia Insertion thermal mass flowmeter includes a sensor probe which is inserted into the flow stream to allow the process gas to flow across the flow sensor. It can be inserted in any flow direction, or up or down. Our insertion flowmeters are available with 1/2", 3/4", or 1" OD probes and may be installed with pipe fitting connections or user-supplied fittings. Tube fittings and ball valve retractor, with or without a mounting flange are also available. The Standard lengths range from a minimum of 6" to a maximum of 36". For other probe diameters and lengths, please consult the factory.

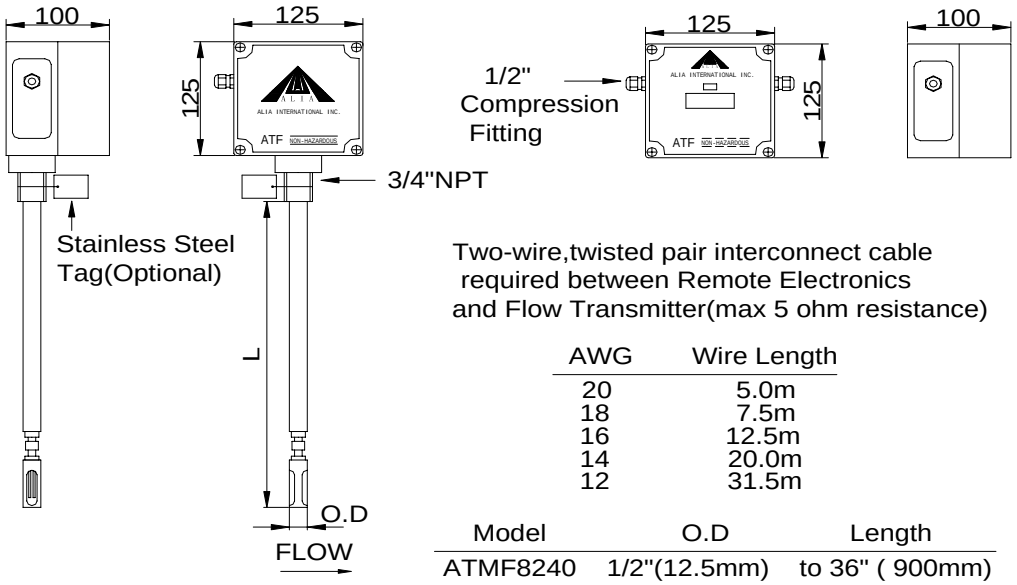
ATMF 8000 Insertion Flowmeters - Remote Version

Hazardous version



Mounting:
Use 1/4"bolls centered 6"X10.75"

Non-Hazardous version



Two-wire,twisted pair interconnect cable required between Remote Electronics and Flow Transmitter(max 5 ohm resistance)

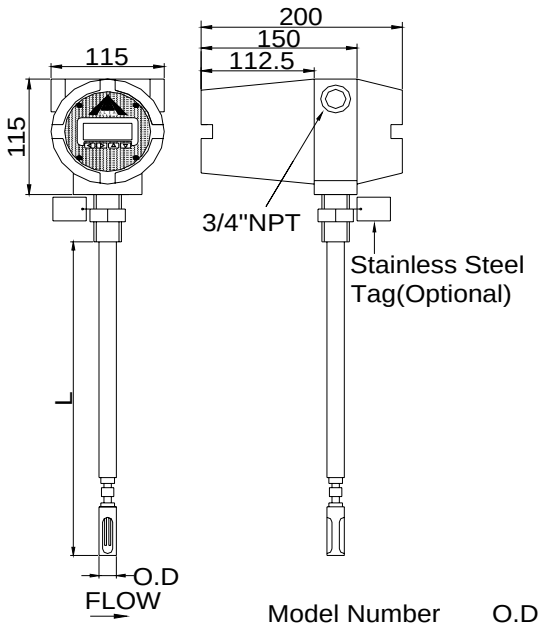
AWG	Wire Length
20	5.0m
18	7.5m
16	12.5m
14	20.0m
12	31.5m

Model	O.D	Length
ATMF8240	1/2"(12.5mm)	to 36" (900mm)
ATMF8260	3/4"(19.0mm)	to 60"(1500mm)
ATMF8280	1"(25.0mm)	to 84"(2100mm)

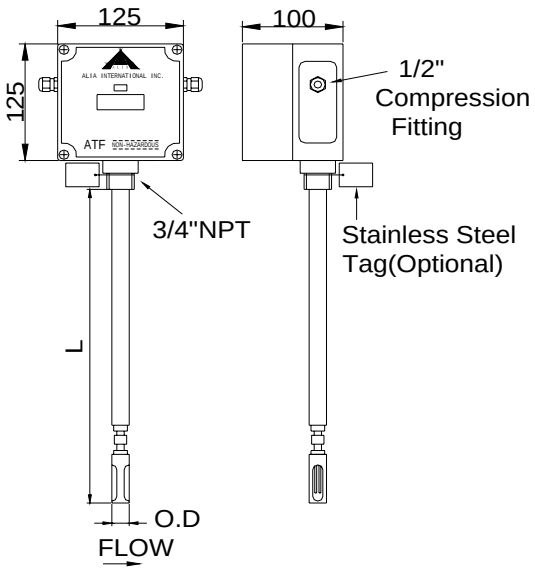
Note:all dimensions are mm unless stated

ATMF 8000 Insertion Flowmeters - Intergral Version

Hazardous version



Non-Hazardous version

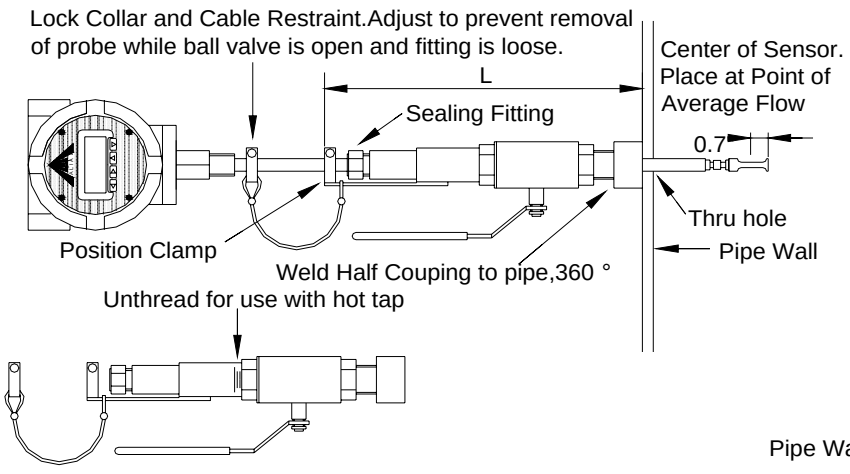


Model Number	O.D	Length
ATMF8840	1/2"(12.5mm)	to 36"(900mm)
ATMF8860	3/4"(19.0mm)	to 60"(1500mm)
ATMF8880	1"(25.0mm)	to 84"(2100mm)

Note:all dimensions are mm unless stated

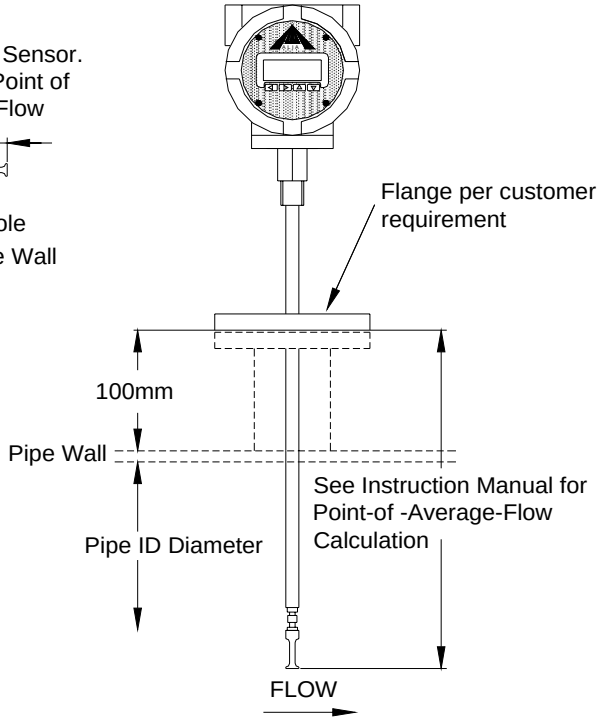
Mounting options

BALL VALVE (BVR) OPTION

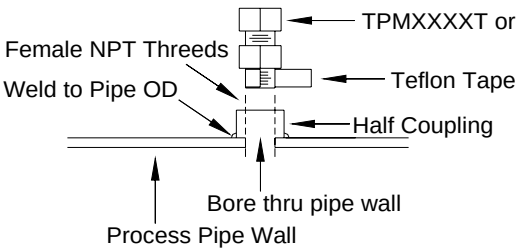


Model	Half Coupling	L	Thru hole	PSIG max	See ID
BVR0812	3/4"NPT	250	16	125	12.5
BVR0812	1"NPT	275	30	55	19
BVR0812	1 1/4"NPT	300	35	30	25

FLANGE OPTION



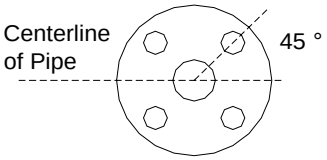
TPM OPTION



Model	Half Coupling	PSIG max
TPM0808T	1/2"NPT	25
TPM0808S	1/2"NPT	225
TPM1212T	3/4"NPT	25
TPM1212S	3/4"NPT	225
TPM1616T	1"NPT	25
TPM1616S	1"NPT	225

T=Teflon Ferrule
S=Stainless Steel Ferrule

Orientation of Flange



Note:all dimensions are mm unless stated

**** Please contact your local SMC application engineer****

You also need to provide the following information:

Gas Composition	Since we calibrate our mass Flowmeters to NIST standards with actual gas or a mixture that reflects the customers process. Gas name and/or gas mixtures listed as a percent of the total,(with the sum equaling 100%) is required.
Full Scale Flow	We need your maximum and minimum flow rates (Full Scale), units must be Kg/hr, Lb/hr, NCMH or SCFM.
Line Size	We need to know your pipe size as well connection type (flange, threaded, etc..)
Gas Pressure and Temperature	We calibrate under conditions as close to your process environment as possible
Electronics Temperature	Temperature of the environment surrounding the Flowmeters electronics.
Power Requirements	Please specify your power requirements such as 24 VDC or 115 VAC or 230 VAC
Configuration	We have various configurations such as Ex proof, Non-Ex proof, remote, integral. See below:

Model Selection Guide

ATMF8000 Series Insertion meters												
Example ATMF8840MP-SSS-XX-133-12"-AC220-NPT-CR1-CONF-Natural Gas (10,000 NCMH,12"ID, 70C,7 Barg)												
AMF8-	X	XX	XXXX	XXX	133	XX"	XXXX	XXXXXXX	XXX	XXXX		Description
Remote	2											Style
Integral	8											
1/2"		40										Probe-Diameter
3/4"		60										
1"		80										
Explosion Proof			MP									Environment
Non Hazardous			MPNH									
316 SS < 70C				SSS								Material
316 SS (70-200C)				SSM								
316 SS (200-325C)				SSI								
316 SS (325-450C)				SSH								
Display- Included					133							Display
Put insertion length in inches						##"						Insertion length
AC 115							AC115					Power Supply
AC 230							AC230					
DC 24							DC24					
NPT								NPT				Process connections
DIN								DNFL				
JIS								JIS				
1/2" ANSI 150#								FBL1502				
3/4"ANSI 150#								FBL1503				
1"ANSI 150#								FBL1504				
11/2"ANSI 150#								FBL1506				
2"ANSI 150#								FBL1508				
1/2"ANSI 300#								FBL3002				
3/4"ANSI 300#								FBL3003				
1"ANSI 300#								FBL3004				
11/2"ANSI 300#								FBL3006				
2"ANSI 300#								FBL3008				
1/2"tube X 3/4" male pipe (swegelock style)								TPM0808S	(For Models 8840)			
3/4"tube X 1" male pipe (swegelock style)								TPM1212S	(For Models 8860)			
3/4"tube X 1" male pipe (swegelock style)								TPM1216S	(For Models 8860)			
1" tube X 1" male pipe (swegelock style)								TPM1616S	(For Models 8880)			
Ball valve retractor-add 10" to overall insertion length								BVR0812	(For Models 8840)			
Ball valve retractor-add 11" to overall insertion length								BVR1260	(For Models 8860)			
Ball valve retractor -add 12" to overall insertion length								BVR1620	(For Models 8880)			
One calibration curve									C1R			No. of output curves
Mutil-calibration curves									C*R			
Extended temperature electronics (-40C to 85C)										ETEMP		Optins
Calibration and test point report										CONF		
Process Gas (Please indicate, gas type, flow rate, line size, pressure and temperature)												Process Data
For larger flange sizes, other material of constructions (Hasteloy C, Monel), high pressure ball valve etc.contact SMC												